

What is claimed is

1. A method for hot flow forming and bending of thin-walled closed, half-open or open structural sections using a bending machine comprising at least two rollers (17, 18) disposed across from each other in the feeding direction of the bending⁵ structural section (21, 21'), behind which at least one forming roller (14) and an opposite central roller (11) are arranged axially spaced apart in the feeding direction, which, together, form a roll-bending zone (40) for the structural section to be formed, wherein at least one bending roller (13) that can be moved toward and away from the structural section to be bent is disposed at the discharge side, **characterized in that** at least the rollers (11, 14) that are disposed in the roll-bending zone (40) are heated.
2. A method according to claim 1, **characterized in that** additional rollers of the bending machine are heated as well.
3. A method according to claim 1 or claim 2, **characterized in that** the support roller disposed proximally of the roll-bending zone in the feeding direction, and the opposed counter roller, which⁶ a support of the structural section to be bent relative to the bending roller disposed toward the front in the feeding direction are heated.

⁵ Translator's note: It appears that a word was omitted here in the German-language sentence. The intended German wording may have been "des zu biegenden Profils" (= the structural section to be bent) instead of "des biegenden Profils" (= the bending structural section).

⁶ Translator's note: This translation is based on an incomplete sentence in the German-language document.

4. A method according to claim according to any of claims 1 through 3, **characterized in that** the opposed forming rollers arranged in the roll-bending zone are designed electrically conductive and are permeated by a high current extending through the structural section (21, 21') to be formed, at least in the region of the roll-bending zone.
5. A method according to any of claims 1 through 4, **characterized in that** the applied current is routed also to the interior of the structural section to be formed, onto the mandrel shank disposed in the interior in the roll-bending zone.
6. A method according to any of claims 1 through 5, **characterized in that** the rollers are heated by a liquid heating means.
7. A method according to any of claims 1 through 6, **characterized in that** the rollers are heated by means of electrically heated cartridge-type heaters and/or heating spirals.
8. A method according to any of claims 1 through 7, **characterized in that** the rollers are heated by radiant panels and/or by means of inductive heating.
9. A method according to any of claims 1 through 8, **characterized in that** additional vertical forming rollers that are disposed perpendicular to the heated rollers and arranged in the roll-bending zone are heated as well.
10. A method according to any of claims 1 through 8, **characterized in that** a preheating takes place at the structural section loading side, namely in the region of the machine frame.

11. An apparatus for hot flow forming and bending of thin-walled closed, half-open or open structural sections using a bending machine comprising at least two rollers (17, 18) disposed across from each other in the feeding direction of the bending⁷ structural section (21, 21'), behind which at least one forming roller (14) and an opposite central roller (11) are arranged axially spaced apart in the feeding direction, which, together, form a roll-bending zone (40) for the structural section to be formed, wherein at least one bending roller (13) that can be moved toward and away from the structural section to be bent is disposed at the discharge side, **characterized in that** at least the rollers (11, 14) that are disposed in the roll-bending zone (40) are heated.
12. An apparatus according to claim 11, **characterized in that** it is intended for carrying out the method according one or more of claims 1 through 10.
13. An apparatus according to either claim 10 or claim 11, **characterized in that** the heated roll-bending zone (40) comprises at least the rotationally driven central roller (11), across from which the forming roller (14) is arranged.
14. An apparatus according to either claim 10 or claim 13, **characterized in that** the structural section (21, 21') to be formed is additionally pushed through the roll-bending zone (40).

⁷ Translator's note: It appears that a word was omitted here in the German-language sentence. The intended German wording may have been "des zu biegenden Profils" (= the structural section to be bent) instead of "des biegenden Profils" (= the bending structural section).

15. An apparatus according to either claim 10 or claim 14, **characterized in that** the mandrel shank (25) in the region of the roll-bending zone (40) is heated and forms a support element (27) for the interior of the structural section.
16. An apparatus according to claim 15, **characterized in that** the front of the mandrel shank (25) has connected to it a link chain (28) consisting of individual links that are connected to one another in an articulated fashion, which come to rest against the interior wall of the hollow structural section, said link chain (28) extending into the region of the bending roller (13).
17. An apparatus according to either claim 10 or claim 16, **characterized in that**, disposed in the region of the roll-bending zone (40) are vertical forming rollers (15, 16) that come to rest against the upper and lower side wall of the structural section.
18. An apparatus according to claim 17, **characterized in that** the vertical forming rollers (15, 16) are heated as well.
19. An apparatus according to either claim 10 or claim 18, **characterized in that** a current flows over the electrically conductive jacket (41) of the forming roller (14) over the electrically conductive structural section (21) to be formed, and is branched off from there onto the electrically conductive jacket (41) of the central roller (11).